

**BEFORE THE
PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA**

**APPLICATION OF KIAWAH ISLAND UTILITY, INCORPORATED TO FILE
PROPOSED CHANGES IN RATES, CHARGES, CLASSIFICATIONS AND/OR
REGULATIONS FOR WATER AND SEWER SERVICE**

DOCKET NO. 2021-324-WS

**SURREBUTTAL TESTIMONY
OF
AARON L. ROTHSCHILD**

COST OF CAPITAL

**ON BEHALF OF
THE SOUTH CAROLINA DEPARTMENT OF CONSUMER AFFAIRS**

March 28, 2022

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I. SUMMARY OF DR. CARLISLE'S COMMENTS

Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

A. The purpose of my Surrebuttal Testimony is to respond to Company witness Douglas Carlisle's Rebuttal Testimony filed on March 10, 2022. First, I provide an evaluation of Dr. Carlisle's rate of return recommendations, including his alternative cost of equity analysis. Second, I address the following issues Dr. Carlisle raises in his rebuttal testimony:

- Relevance of Current Economic Conditions to KIU's cost of capital
- Reasonableness of my Cost of Debt and Capital Structure Recommendations
- Application of my DCF Model
- Application of my CAPM Reasonableness of my Cost of Equity Recommendation

As addressed below, Dr. Carlisle brings up some important topics that are unfortunately often ignored. These topics include (1) making sure we're not being fooled by random variation in capital market data¹, (2) appropriately accounting for the impact of

¹ Dr. Carlisle's Rebuttal Testimony, page 8, lines 2-3.

1 “survivorship bias”² when measuring historical stock return data³, and (3) questioning the
2 notion that companies have an intrinsic value⁴.

3 I believe it’s in the public interest to develop many of his ideas further. However,
4 in my opinion, he does not follow through by considering these valid points when he makes
5 his own calculations. For example, despite claiming that survivorship bias can lead to
6 inflated cost of equity results, he uses an averaging technique that, by his own admission,
7 is inflated by the impact of survivorship bias.⁵ He claims that my approach is “based on
8 some notion of the intrinsic value of an enterprise”⁶, but his claim contradicts my
9 testimony’s core philosophy. As explained numerous times in my Direct Testimony, I
10 focus on using market data (e.g., stock prices, bond yields, stock option prices) to measure
11 investors’ expectations as much as possible. I do not attempt to calculate the intrinsic value
12 of water utility companies or determine if investors’ expectations are correct or not as Dr.
13 Carlisle implies.

² Recognizing the limitations of our data collection process can impact what conclusions we can make from the data. It is not an accident that the only data that is available to us is from the stock exchanges and companies that survive. Therefore, when calculating historical equity returns it is important to recognize that the data might not reflect the impact of the companies that went bankrupt. Therefore a “survivorship bias” could be making historical equity returns appear higher than reality if our dataset does not include the companies that went bankrupt.

³ Dr. Carlisle’s Rebuttal Testimony, page 21, lines 2-3.

⁴ Dr. Carlisle’s Rebuttal Testimony, page 8, lines 11-12.

⁵ Dr. Carlisle’s Rebuttal Testimony, page 32, lines 19-21.

⁶ Dr. Carlisle’s Rebuttal Testimony, page 8, lines 11-12.

II. EVALUATION OF DR. CARLISLE'S ALTERNATIVE COST OF EQUITY ANALYSIS

Q. PLEASE SUMMARIZE DR. CARLISLE'S ALTERNATIVE COST OF EQUITY ANALYSIS.

A. Dr. Carlisle does not endorse an ROE of 11.24% based upon KIU's margin. He favors an ROE "somewhere around 9.35%, and a low end of 8.43%".⁷ He arrived at his recommendation based upon his own versions of the Discounted Cash Flow ("DCF") model, Comparable Earnings Method ("CEM"), and Capital Asset Pricing Model ("CAPM").⁸ The results of his methods range between 7.74% and 9.60%.⁹ However, he recommends a 9.35% ROE and a range of between 8.43% and 9.35% because he expects economic factors will cause his wider range to converge over the next year or two.¹⁰ He favors the top end of his range (9.35%) because "a market correction is already underway".¹¹

Q. PLEASE RESPOND TO DR. CARLISLE'S ALTERNATIVE COST OF EQUITY ANALYSIS.

A. Dr. Carlisle's DCF approach is reasonable because, as explained further below, it includes measures to determine a sustainable growth rate component. His DCF approach produces a lower result (7.74%)¹² than my constant growth DCF approach (8.15% - 8.27%) primarily because he does not account for the growth from the sale of new common stock as I do.

⁷ Dr. Carlisle's Rebuttal Testimony, page 37, lines 13-18.

⁸ Dr. Carlisle's Rebuttal Testimony, page 20, lines 15-17.

⁹ Dr. Carlisle's Rebuttal Testimony, page 6, lines 1-2.

¹⁰ Dr. Carlisle's Rebuttal Testimony, page 5, lines 11-14.

¹¹ Dr. Carlisle's Rebuttal Testimony, page 5, lines 14-16.

¹² Dr. Carlisle's Rebuttal Testimony, page 6, lines 1-2.

Dr. Carlisle's CEM result of 9.11%¹³ should be disregarded because it is not market-based. This method is merely a list of accounting information. His CEM is like a traditional scale without a counterweight – without market data as a counterweight to the accounting data, we cannot measure investors' return expectations and we certainly cannot determine the cost of equity.

His CAPM result of 9.60% overstates KIU's cost of equity because it relies on (1) backward looking betas (5-year historical) that are too high because they are still significantly impacted by the relatively brief (March-April 2020) capital market turmoil during the initial phases of the pandemic, and (2) a risk premium component that is inflated by an averaging technique (arithmetic mean) that exaggerates stock returns and includes an unjustified size adjustment. His risk premium includes a size adjustment because it includes the 11.90% geometric mean returns of the smallest companies in the data provided by the book Stocks, Bonds, Bills, and Inflation. As discussed below, the conclusion that these higher historical returns for small companies reflects a higher cost of equity for small firms has always been controversial and recent research shows that the size of a company almost certainly does not impact its cost of equity.

A. DCF Model

Q. WHAT FORMULA DOES DR. CARLISLE USE IN HIS DCF ANALYSIS?

$$k = (DIV/P_0 * (g/2)) + g$$

A.

Where:

P_0 : stock price;

¹³ Dr. Carlisle's Rebuttal Testimony, Exhibit DHC-12, page 4 of 4.

DIV: *dividend*;
g: *growth rate*.¹⁴

Q. DOES DR. CARLISLE PROPERLY APPLY THE SIMPLIFIED OR CONSTANT GROWTH DCF METHOD?

A. I find Dr. Carlisle's DCF to be a reasonable approach primarily because he does not mechanically use analyst 5-year earnings-per-share growth rates as the growth component as done by all other utility rate of return witnesses I am aware of. More appropriately, his growth rate component of 6.35%¹⁵ is based on an average of various factors, including book value growth, dividend growth and earnings growth. He explains that the simplifying assumptions of the DCF, including constant growth over an infinite time horizon, "can be challenged as unrealistic and must be relaxed to recognize medium-term conditions".¹⁶ In this case, his approach of averaging these various factors is a reasonable way to make sure the growth rate component is realistic and his result of 7.74% is reasonable.

B. CEM Analysis

Q. PLEASE EXPLAIN THE COMPARABLE EARNINGS ANALYSIS PRESENTED BY DR. CARLISLE.

A. Dr. Carlisle's states that his CEM analyses (Retrospective and Prospective) consist of simply calculating average book value growth (5-year book value changes and Value Line 3-5 year projected changes) of two groups of non-regulated companies.¹⁷ He does not explain in his CEM analysis if or how he incorporates the dividend yield data for the

¹⁴ Dr. Carlisle's Rebuttal Testimony, page 25, lines 15-17.

¹⁵ Dr. Carlisle's Rebuttal Testimony, Exhibit DHC-8, page 1 of 1.

¹⁶ Dr. Carlisle's Rebuttal Testimony, page 23, lines 16-17.

¹⁷ Dr. Carlisle's Rebuttal Testimony, page 28, lines 20-22 and page 29, lines 1-3.

companies provided in Exhibit DHC-11. Dr. Carlisle claims that these non-regulated companies are comparable to his Proxy Group of regulated water utility companies because they (1) pay dividends, (2) had betas in the same range as the companies in his Proxy Group, and (3) had book value growth.¹⁸ These two groups of companies include, among others, Apple Inc., Coca-Cola, and Ferrari.¹⁹

Q. PLEASE SUMMARIZE THE RESULTS OF DR. CARLISLE'S CEM ANALYSIS.

A. Dr. Carlisle's CEM analysis produced the following results:

- His Retrospective CEM produced a mean result of 9.08%, and a median result of 7.50%. He reports an average of mean and median result of 8.29%.²⁰
- His Prospective CEM produced a mean result of 10.86%, and a median result of 9.00%. He reports an average of mean and median result of 9.93%.²¹
- He states that the overall result of his CEM analysis is 9.11% which is the average of 8.29% and 9.93%.²²

Q. IS THIS METHOD VALID?

A. No. Dr. Carlisle has attempted to determine the cost of equity that would be demanded by investors on the market price of a company comparable to KIU by comparing it to the historic and projected returns on book equity of a selection of unregulated companies. First, non-regulated companies like Apple, Inc. and Ferrari are simply not comparable to KIU, especially for purposes of a rate of return on rate base calculation based on *Hope* and

¹⁸ Dr. Carlisle's Rebuttal Testimony, page 28, lines 21-22 and page 29, line 1.

¹⁹ Dr. Carlisle's Rebuttal Testimony, Exhibit DHC-11.

²⁰ Dr. Carlisle's Rebuttal Testimony, Exhibit DHC-11, page 6 of 6.

²¹ Dr. Carlisle's Rebuttal Testimony, Exhibit DHC-12, page 4 of 4/

²² Dr. Carlisle's Rebuttal Testimony, page 29, lines 7-8.

1 *Bluefield* principles. However, even if companies selling smart phones and luxury sports
 2 cars were comparable to companies like KIU that are providing water distribution services,
 3 Dr. Carlisle's CEM analysis is irrelevant to this proceeding. His CEM is irrelevant because
 4 it does not address the cost of equity at all. It simply considered the change in returns on
 5 book equity that were achieved and are expected by Value Line in the next 3 to 5 years.

6 The earned return on book equity is an entirely different concept from the cost of
 7 equity. My DCF approach relies upon future expected return on book equity calculations,
 8 but most critically it does not stop there. It relates this accounting return data to the market
 9 price of water utility stocks. A method based on only the return on book equity, without
 10 considering market prices, has recently been discredited and eliminated from consideration
 11 in Federal Energy Regulatory Commission (FERC) ROE proceedings. FERC determined
 12 it is not appropriate to use the Expected Earnings model because "the record does not
 13 support departing from our traditional use of market-based approaches to determine base
 14 ROE."²³ FERC goes on to say:

15 In *Hope*, the Supreme Court explained that 'the return to the equity owner
 16 should be commensurate with returns on investments in other enterprises
 17 having corresponding risks.' In order to determine this, we must analyze the
 18 returns that are earned on 'investments in other enterprises having
 19 corresponding risks,' but investors cannot invest in an enterprise at book
 20 value and must instead pay the prevailing market price for an enterprise's
 21 equity. As a result, the expected return on a utility's book value does not
 22 reflect 'returns on investments in other enterprises' because book value does
 23 not reflect the value of any investment that is available to an investor in the
 24 market, outside of the unlikely situation in which market value and book
 25 value are exactly equal. Accordingly, we find that relying on the Expected
 26 Earnings model would not satisfy the requirements of *Hope*.²⁴

²³ FERC Opinion No. 569. Par 200.

²⁴ FERC Opinion No. 569, par 201.

As explained clearly by FERC, models based on return on book equity should be excluded from consideration in this proceeding because they violate regulatory principles that require the cost of equity to be market-based.

C. CAPM Analysis

Q. PLEASE DESCRIBE DR. CARLISLE'S CAPM METHOD.

A. Dr. Carlisle states that the base premise of the CAPM is that (1) a risky investment must provide more return than a riskless one, and (2) investors demand compensation only for non-diversifiable risk, which is derived from a stock's riskiness relative to the overall market.²⁵ Dr. Carlisle provides the following equation in the CAPM section of his testimony:

$$K = R_f + \beta (R_m - R_f)$$

Where:

K	=	the Cost of Capital or ROE;
β	=	covariance or how much a stock moves compared to the overall market;
R_f	=	Risk-Free Return; and
R_m	=	the long-term market return. ²⁶

Q. WHAT RISK-FREE RATE DOES DR. CARLISLE USE IN HIS CAPM?

A. He uses the year-and-a-half forward estimates of 30-year Treasury bond yield (2.70%) published by Blue Chip periodical.²⁷

²⁵ Dr. Carlisle's Rebuttal Testimony, page 29, lines 17-22 and page 30, lines 1-2.

²⁶ Dr. Carlisle's Rebuttal Testimony, page 34, lines 6-18.

²⁷ Dr. Carlisle's Rebuttal Testimony, page 32, lines 7-8

1 **Q. WHAT BETA COEFFICIENT DOES DR. CARLISLE USE IN HIS CAPM?**

2 **A.** He uses 5-year historical betas published by Value Line.²⁸

3 **Q. WHAT RISK PREMIUM DOES DR. CARLISLE USE IN HIS CAPM?**

4 **A.** Dr. Carlisle's Equity Risk Premium ("ERP") of 8.71% is equal to his market return
5 component of 11.41% minus his 2.70% risk-free rate. His market return considers the
6 geometric and arithmetic mean of historical stock return data (1926-2019) for both the
7 largest companies and smallest companies reported by the book Stocks, Bonds, Bills, and
8 Inflation. For the largest companies, the geometric mean return is 10.20% and the
9 arithmetic mean return is 12.10%. For the smallest companies, the geometric mean return
10 is 11.90% and the arithmetic mean return is 16.30%. He does not use the average of these
11 four results (12.63%) in his CAPM because, he claims, doing so would not "recognize
12 survivorship bias and the exaggerations of returns inherent in using arithmetic mean".²⁹
13 He claims that he "resolved this conflict by averaging the extremes." However, the
14 numbers do not add up. The average of the smallest (10.2%) and largest (16.30%) is not
15 the 11.41% as he claims. It appears that he uses the average of the geometric mean returns
16 of the largest companies (10.2%) and the average of the means of all of his results
17 (12.63%).

18 **Q. DOES DR. CARLISLE USE AN APPROPRIATE RISK-FREE RATE IN HIS**
19 **CAPM?**

20 **A.** No. The risk-free rate component of Dr. Carlisle's CAPM is not appropriate because it is
21 based on published interest rate projections that are higher than investors' current interest

²⁸ Dr. Carlisle's Rebuttal Testimony, page 33, line 21.

²⁹ Dr. Carlisle's Rebuttal Testimony, page 32, lines 13-21.

1 rate expectations as indicated by current market yields. As discussed above, KIU's
2 authorized ROE should be market-based, not based on published interest rate speculations.

3 **Q. DOES DR. CARLISLE'S BETA COEFFICIENT OVERSTATE THE COST OF**
4 **EQUITY?**

5 **A.** Yes. The beta coefficient portion of his CAPM alone likely inflates his result by about 50
6 basis points because he uses 5-year historical betas of the companies in his proxy group
7 (average of mean and median of 0.79) instead of betas based on investors' current
8 expectations (option-implied betas) and more recent historical data. The average option-
9 implied beta for the water utility companies in my proxy group over the past 3-months is
10 0.719. And my hybrid beta, which incorporates both historical and option-implied betas,
11 indicates that the appropriate beta to use in the CAPM is 0.751.

12 **Q. DO YOU AGREE WITH THE RESULTS OF DR. CARLISLE'S CAPM**
13 **ANALYSIS?**

14 **A.** No, I do not agree with the 9.60% result of Dr. Carlisle's CAPM because it is not based on
15 investor expectations. He uses historical data (e.g., betas) and analyst forecasts (e.g.,
16 interest rates) instead of investor expectations as revealed by market data. His use of
17 historical and non-market-based data in his CAPM analysis contradicts his statement that
18 "there is a tradeoff between risk and reward and...assessing that tradeoff should be based
19 on market forces."³⁰ Stock option data indicates that investors expect betas for water utility
20 stocks to be lower than historical betas over the time periods used by Dr. Carlisle (5 years).

³⁰ Dr. Carlisle's Rebuttal Testimony, page 8, lines 1-2.

1 Stock option data also indicates that investors expect a risk premium over 30-year U.S.
2 Treasuries of 8.20%, not the 8.71% used by Dr. Carlisle.

3 **Q. IS DR. CARLISLE’S CAPM RESULT ALSO INFLATED BY A SMALL-FIRM**
4 **EFFECT?**

5 **A.** Yes. Dr. Carlisle states that he does not use the geometric mean return of large stocks,
6 which is 10.20%, because doing so would not account for the “behavior of medium-sized
7 and small stocks.” However, Dr. Carlisle’s claim that the behavior of smaller stocks is
8 relevant to the COE is not supported by the evidence and therefore, KIU’s consumers
9 should not be charged higher rates based on his inflated CAPM results.

10 Many scholars have expressed concerns with the results of older studies (1980s and
11 1990s) that found that smaller companies have higher required returns. Professor Aswath
12 Damodaran said the following regarding the supposed “small cap premium:”

13 Even if you believe that small cap companies are more exposed to market
14 risk than large cap ones, this is an extremely sloppy and lazy way of dealing
15 with that risk, since risk ultimately has to come from something
16 fundamental (and size is not a fundamental factor).³¹

17 **Q. DO THE RESULTS OF RECENT STUDIES PROVIDE ADDITIONAL EVIDENCE**
18 **THAT SMALLER FIRMS DO NOT HAVE A HIGHER COST OF EQUITY THAN**
19 **LARGE FIRMS?**

20 **A.** Yes. A 2018 study conducted by scholars at AQR Capital Management and Yale
21 University found that “the size effect diminished shortly after its discovery and
22 publication.”³² The authors of this research found that data errors plagued the early studies

³¹ Aswath Damodaran, Equity Risk Premiums (ERP): Determinates, Estimation and Implications – The 2014 Edition (paper updated, March 2015) page 42.

³² Ron Alquist, Ronen Israel, and Tobias Moskowitz, Fact, Fiction, and the Size Effect, *The Journal of Portfolio Management*, Fall 2018, page 3.

1 regarding the relationship between firm size and return. They found that the data in the
 2 earlier studies did not include delisted companies and since smaller firms are delisted more
 3 often than larger stocks, the biased data (referred as a “delisting bias”) made the returns of
 4 smaller stocks look higher than reality.³³

5 Dr. Carlisle’s CAPM is inflated because he takes steps to increase his results for a
 6 so-called small firm effect that has been put into serious question by recent research. His
 7 use of the arithmetic mean, by his own admission, exaggerates market returns because it
 8 does not account for the impact of “delisting bias”³⁴. Therefore, his CAPM overstates
 9 KIU’s cost of equity because the risk premium portion of this method is impacted by these
 10 exaggerated returns.

11 III. CURRENT ECONOMIC CONDITIONS

12 **Q. ON PAGE 37 OF HIS REBUTTAL TESTIMONY, DR. CARLISLE CLAIMS THAT**
 13 **“WE KNOW THAT THE COSTS OF DEBT AND EQUITY ARE LIKELY TO GO**
 14 **UP.” PLEASE RESPOND.**

15 **A.** I strongly disagree with Dr. Carlisle’s claim that “we know” what capital markets are likely
 16 to do. As explained throughout my Direct Testimony, capital markets are unpredictable.
 17 This makes sense, because if we knew what capital markets were going to do, we could all
 18 make a lot of money quickly by buying the right stocks and bonds. It is possible to make

³³ Ron Alquist, Ronen Israel, and Tobias Moskowitz, Fact, Fiction, and the Size Effect, *The Journal of Portfolio Management*, Fall 2018, page 5.

³⁴ Dr. Carlisle uses the term “survivorship bias” instead of “delisting bias”.

1 a lot of money in the stock market, but putting yourself in a position where you can make
 2 a lot of money usually requires accepting considerable risk that you will lose a lot of money

3 **Q. IS IT APPROPRIATE TO SET KIU'S COST OF EQUITY BASED ON DR.**
 4 **CARLISLE'S CAPITAL MARKET SPECULATIONS?**

5 **A.** No. It is not appropriate to set rates based on Dr. Carlisle's, or anyone else's, capital market
 6 speculations because capital market are unpredictable. Dr. Carlisle favors the top end of
 7 his cost of equity model results (9.35%) because of what he believes capital markets will
 8 do in the future. His claim that the "30-Year Treasury benchmark for CAPM is likely to
 9 increase" sounds reasonable considering that the Federal Reserve raised the Federal Funds
 10 Rate recently and has indicated it will continue to do so later this year. His claims that
 11 inflation and interest rates will be higher in the future and that "we know that the Costs of
 12 Debt and of Equity are likely to go up" might also seem reasonable. However, it is
 13 important to remember just how unpredictable life and capital markets really are.
 14 Regarding predicting the course of history, the well-known former stock option trader and
 15 philosopher Nassim Taleb, stated the following in his book *The Black Swan*:

16 Our cumulative prediction errors for political and economic events are so
 17 monstrous that every time I look at the empirical record I have to pinch
 18 myself to verify that I am not dreaming. What is surprising is not the
 19 magnitude of our forecast errors, but our absence of awareness of it.³⁵

20 The actual cost of capital KIU will pay when it raises money will be determined by
 21 the market and not by the speculation of financial publications and rate of return witnesses.
 22 If investors are influenced by interest rate forecasts published by Blue Chip Financial
 23 Forecasts, as Dr. Carlisle's assumes³⁶, the price of stocks and bonds will reflect this.

³⁵ The Black Swan, Taleb N. Nassim, 2007, xx Prologue

³⁶ Dr. Carlisle relies on Blue Chip Financial Forecasts in his testimony.

1 Therefore, interest rate forecasts are, at best, unnecessary. But using interest rate forecasts
2 and personal speculations, instead of market-based data, in cost of equity calculations is
3 not just a redundancy. Capital market speculation, including published interest rate
4 forecasts, is financial astrology in most cases and should not be used in cost of capital
5 testimony. I have been criticized for many years by expert witnesses who have claimed to
6 know that interest rates were about to increase since the financial crisis of 2007-2008, or
7 that utility stock prices are about to decline. It turned out that interest rates declined
8 substantially despite the fact that these witnesses “knew” they were going to increase.
9 Those who are willing to provide forecasts of the unforecastable often argue that their
10 forecast would have been correct if not for a specific unexpected event. However, capital
11 markets are fundamentally unpredictable because there are always unexpected events (e.g.,
12 war, pandemics, natural disasters) that impact them, including interest rates. KIU’s rates
13 should not be set based on such speculations.
14

15 **Q. YOU SAY THAT CAPITAL MARKETS ARE UNPREDICTABLE, BUT CAN’T**
16 **WE ALL AGREE THAT INFLATION RATES ARE GOING TO REMAIN HIGH**
17 **AND DRIVE UP INTEREST RATES?**

18 **A.** I would agree that we know that inflation is currently high, but it is far from certain what
19 inflation rates will be in the future. Regardless of what inflation will be in the future,
20 investors’ expectations regarding inflation will be reflected in the current prices of stocks
21 and bonds. As explained in my Direct Testimony, it is important to recognize that current
22 long-term Treasury bond yields represent a direct observation of investor expectations and
23 there is no need to use “experts” to determine market-based cost of equity.

**IV. REASONABLENESS OF MY COST OF DEBT AND CAPITAL STRUCTURE
RECOMMENDATIONS**

**Q. HOW DOES DR. CARLISLE RESPOND TO YOUR RECOMMENDED 3.39%
COST OF DEBT?**

A. He does not respond to my argument that KIU's cost of debt should be set at the cost rate (3.39%) of bonds issued by its parent Southwest Water Company in October 2020. Regarding KIU's cost of debt, Dr. Carlisle only states, "I do not have direct knowledge of the alternatives" and the Commission approved its requested cost of debt in a prior case.

Q. DO YOU STILL RECOMMEND A 3.39% COST OF DEBT FOR KIU?

A. Yes. I continue to recommend KIU be authorized a cost of debt of 3.39%. As stated in my Direct Testimony, there is no justification for KIU to continue to pay a higher interest rate than Southwest Water Company's current cost of debt because the loan agreement between KIU and its parent does not have a prepayment penalty.

**Q. DO YOU AGREE WITH DR. CARLISLE AND ORS WITNESS GARRETT THAT
KIU'S IMPLIED CAPITAL STRUCTURE WITH A 46.81% DEBT RATIO (53.19%
COMMON EQUITY) IS "CLOSE ENOUGH TO BE REASONBLE UNDER THE
CIRCUMSTANCES?**

A. No. I continue to recommend a capital structure containing 49.86% equity and 50.14% debt based on the average capital structure ratios of the companies in my proxy group. Dr. Carlisle did not provide any justification for KIU's implied capital structure other than it is "close enough to be reasonable." KIU has the burden of proof to justify their rate request and claiming that a capital structure is "close enough to be reasonable" is far from proof

1 that their request is just and reasonable. If KIU's implied capital structure is used to set
2 rates instead of the average capital structure of the companies in my proxy group, it will
3 result in higher rates to consumers because it includes 3.33% (53.19% - 49.86%) more
4 common equity than the average common equity ratio of the companies in my proxy group.
5 In the absence of evidence regarding the appropriateness of KIU's capital structure, it is
6 appropriate to use the average capital structure ratios of the water utilities in my proxy
7 group because the fact these companies are able to fund their operations with a lower
8 common equity ratio indicates that KIU is likely able to as well.

9 V. DR. CARLISLE'S CRITICISMS OF MY METHODS

10 A. CONSTANT GROWTH DCF

11 **Q. DR. CARLISLE'S DCF RESULT OF 7.74% IS LOWER THAN THE RESULTS OF**
12 **YOUR CONSTANT GROWTH DCF METHOD WHICH RANGES BETWEEN**
13 **8.15% AND 8.27%. WHY DOES HE GET A LOWER RESULT THAN YOU?**

14 **A.** Dr. Carlisle's DCF result of 7.74% is lower than my results because he does not account
15 for the growth investors expect to receive from the sale of new common stock. As shown
16 in Table 1 below, the dividend yield, incremental growth to dividend growth, and the
17 growth rate components in both of our methods are relatively similar. However, my DCF
18 result is higher than Dr. Carlisle's because I included the growth from external financing
19 of 0.68% and he did not.

Table 1: DCF Comparison - Rothschild and Carlisle

	Carlisle	Rothschild	Ave Difference
Dividend Yield	1.88%	1.66%-1.70%	-0.20%
Increment to Div Growth	0.06%	0.05%	-0.01%
Growth Rate	6.35%	6.02% - 6.19%	-0.25%
External Financing Growth	0.00%	0.68%	0.68%
Total Average Difference			0.23%

Q. DO YOU KNOW WHY DR. CARLISLE IS CRITICIZING YOUR DCF METHODOLOGY WHEN IT IS PRODUCING HIGHER RESULTS THAN HIS 7.74%?

A. No. Presumably he decided to criticize my DCF approach despite producing a result that is more favorable for KIU's investors because he disagrees with my sustainable growth methodology on technical grounds. His criticisms are unreasonable. Dr. Carlisle's claim that my DCF methodology "creates perverse incentives" because it directly links book value to ROE is illogical. First, a cost of equity recommendation is an exercise in measurement, not an act of creating incentives. A rate of return witness measures investors' return expectations. These expectations are impacted by many factors, including the future expected return on book equity (Dr. Carlisle refers to this as "book value") that I use in my methodology. However, Dr. Carlisle's criticisms are illogical because they would equally apply to his own or any DCF methodology that uses inputs that are impacted by authorized ROEs. **The future expected return on book equity** of a water utility goes up or down depending on its authorized ROE. **The earnings-per-share** of a water utility goes up or down depending on its authorized ROE. **The dividends-per-share** of a water

1 utility goes up or down depending on its authorized ROE. Dr. Carlisle's claim that my
2 DCF methodology is problematic because it is "directly linked to ROE" is unfounded and
3 should be disregarded.

4 **B. CAPM ANALYSIS**

5 **Q. PLEASE SUMMARIZE DR. CARLISLE'S CRITICISMS OF YOUR CAPM**
6 **ANALYSIS.**

7 **A.** Dr. Carlisle states that the results of my CAPM analysis are not reasonable. His criticisms
8 of my methodology are primarily based on the following two points: (1) the reliability of
9 my betas, and (2) the supposed inclusion of transitory data. Dr. Carlisle also makes other
10 statements that are difficult to categorize as potential points of criticism or simply
11 observations. For example, he states that I have eight different CAPM results. It is not
12 clear if he considers this as thoroughness or as a problem.

13 **Q. PLEASE RESPOND TO MR. CARLISLE'S CRITICISMS OF YOUR CAPM**
14 **ANALYSIS.**

15 **A.** As discussed in the introduction above, Dr. Carlisle brings up some important points.
16 However, he does not follow through and provide the necessary justifications regarding the
17 two criticisms mentioned above.

18 (1) Dr. Carlisle states it is not clear that my own beta calculations are more reliable than
19 Value Line's calculations.

20 As explained in my Direct Testimony, since the cost of equity should be based on investor
21 expectations, I chose to use two betas. My "forward beta" is based on forward-looking
22 investor expectations of non-diversifiable risk based on stock option prices. I chose to use
23 these option-implied betas in my CAPM analysis because, among other reasons, studies

1 have found that betas calculated based on investor expectations (option-implied) provide
 2 information regarding future perceived risks and expectations.³⁷ My “hybrid beta” is based
 3 on both forward-looking investor expectations and historical return data – my historical
 4 return data includes a weighted average of 6-month, 2-year, and 5-year periods.

5 Dr. Carlisle relies exclusively on Value Line’s published 5-year historical betas for
 6 each of the companies in his proxy group. Relying exclusively on 5- year historical betas
 7 is problematic because it is only backward looking and may not reflect investors’ current
 8 expectations. Dr. Carlisle’s claim that it is not clear that my own beta calculations are more
 9 reliable than Value Line’s 5-year historical betas is completely unfounded. He does not
 10 provide any analysis to support his claim that my beta coefficients, that rely on more recent
 11 market data, are less reliable than Value Line’s published betas.

12
 13 (2) Dr. Carlisle states my calculations are based on short-term data that he claims likely
 14 “capture transitory, atypical, results in the current economic environment.”³⁸

15 It is ironic that Dr. Carlisle criticizes my calculations for likely being overly influenced by
 16 transitory events when his 5-year historical betas are still being highly impacted by the
 17 historic events that unfolded during the onset of the pandemic in March-April 2020. The
 18 stock option data that I use, covering the past 3-months, is almost certainly more
 19 representative of KIU’s current cost of equity than the data used by Dr. Carlisle.

³⁷ Bo-Young Chang & Peter Christoffersen & Kris Jacobs & Gregory Vainberg. (2011) Option-Implied Measures of Equity Risk, *Review of Finance* 16: 385-428.

³⁸ Dr. Carlisle’s Direct Testimony, page 16, lines 9-11.

1 **VI. REASONABLENESS OF MY COST OF EQUITY RECOMMENDATION**

2 **Q. ON PAGE 6-7 OF HIS REBUTTAL TESTIMONY, DR. CARLISLE STATES THAT**
3 **YOUR LIST OF PUBLIC UTILITY COMMISSION DECISIONS DOES NOT**
4 **REFLECT THE REGULATORY UNIVERSE. PLEASE RESPOND.**

5 **A.** I do not pretend to provide the “regulatory universe” of average authorized ROEs around
6 the country. I do not do this because, as explained throughout my Direct Testimony, KIU’s
7 authorized ROE should be market-based. I believe it is dangerous and goes against the
8 principles set out in Hope and Bluefield if regulators continually look to other regulators
9 to determine the cost of equity. KIU’s authorized ROE should be set based on the expected
10 returns on investments in other enterprises having corresponding risks.

11 In my Direct Testimony, I included some authorized ROE data and the forecasts of
12 financial institutions as additional evidence that my 7.47% ROE recommendation for KIU
13 is reasonable and will allow them to raise the capital needed to provide safe and reliable
14 service. It is important to acknowledge that state utility commissions, as well as the
15 financial industry, have found that the COE of regulated water utility companies is
16 significantly lower than KIU’s implied ROE request.

VII. CONCLUSION

Q. PLEASE SUMMARIZE YOUR REACTION TO DR. CARLISLE'S REBUTTAL TESTIMONY.

A. Dr. Carlisle's criticisms of my Direct Testimony are unsupported and should be rejected. If adopted, my cost recommendations would allow KIU to raise the capital it needs to provide safe and reliable service because my recommendations are consistent with investors' return expectations.

Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?

A. Yes.